THE AUSTRALIAN PLANT DISEASE RECORDER.

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I N D E X

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PLANT DISEASE NOTES.

FIELD AND FODDER CROPS.

CORTICIUM PRATICOLA AS A PASTURE PATHOGEN:

In A.P.D.R. 3:3:35-36, 1951, attention was drawn to three pasture abnormalities under observation in the Keith district, South Australia. One appeared identical with purple patch of cereals caused by Rhizoctonia solani, the second type was considered to be due to nematodes, and the third was described as involving the death of many subterranean clover seedlings, the survivors being severely stunted and bluish or greyish green. Reddish brown lesions occurred on the hypocotyls just below soil level, but roots were relatively free from rotting. This abnormality did not occur in well defined patches, but was exceptionally severe over an area of several acres and more widespread in a milder form. This condition, known for the present as "general unthriftiness" has received continued attention.

Further investigation showed that cereals and brome grasses in these areas were also affected. Brown lesions appeared under the sheath about ground level and on rare occasions rotting was so severe that the stem was girdled and the plants damped off. In most cases, however, the lesions were of a very mild nature and the plants made normal growth.

Organisms isolated from diseased plants were tested for pathogenicity against sub.clover and brome grass in the glass-house. It was found that several isolates of Corticium praticola produced symptoms similar to those occurring in areas of "general unthriftiness" in the field. A field experiment now in progress has already produced enough evidence to suggest that C. praticola is the pathogen concerned with this condition.

Further investigations are being made and a report on all three pasture abnormalities will be published elsewhere.

C.S.I.R.O.,
Canberra.

- J. BROCKWELL.

A STEM ROT OF COWPEAS:

A severe outbreak of a stem rot disease of cowpeas occurred in South East Queensland during February and March, 1952. The disease caused considerable damage over a wide area including the Darling Downs, the Lockyer Valley, and Boonah districts. Losses were particularly heavy in fields where cowpeas had been grown every season for many years to maintain soil fertility. Infections as high as 90% were not uncommon. The disease developed rapidly following the first break in the drought conditions which prevailed throughout the spring and early summer of 1951-52.

The first symptom noted was a general yellowing of the leaves. Affected plants had a brownish red lesion on the stem usually commencing at or near ground level. This often extended along the entire length of the stem even embracing the tip. It was not uncommon to find the stem completely girdled by the lesion. The root system appeared quite dead and was covered with a mat of pink and white spore masses.

Numerous Fusaria and a Phycomycete were consistently isolated from the diseased material. Pathogenicity tests proved only the Phycomycete capable of reproducing the symptoms in seedlings. Oospores were subsequently located in the cortical tissue of the inoculated plants.

This disease closely resembles that described as red stem canker (Phytophthora cactorum) by J. L. Weimer (J.A.R. Vol. 78, Nos. 3 and 4.). However, a study of the Phycomycete isolated showed that while it resembles Phytophthora cactorum (Leb. and Cohen) Schroet. in most respects it consistently bore amphigynous antheridia. Its identity is being further investigated.

Department of Agriculture,
Brisbane.

- G.S. PURSS and G.D. BOWEN.

VEGETABLES.

SUSPECTED PINK ROT OF POTATO TUBERS:

On harvesting a crop of potatoes from a Canberra home garden in March, 1952, about two-thirds of all tubers were found to be affected with a firm rot. The above ground parts had appeared quite healthy. The diseased potatoes had a sweet sickly odour, and a pink colouration developed after cut surfaces were exposed to the air for a few minutes. After about an hour this colour became a uniform deep salmon pink. In tubers only partially affected the junction of diseased and healthy areas was marked by a line of darker coloured tissue.

Isolations at this point yielded a fungus which was identified as a Phytophthora. Inoculation tests on healthy tubers reproduced the disease.

These symptoms are similar to those of pink rot described by Jones (Scientific Agriculture, 25: 10: 597-600, 1945). Jones identified the causal organism as Phytophthora erythroseptica Pethy. It is considered that the disease occurring in Canberra is identical with pink rot but the identity of the fungus is being checked to confirm this.

C.S.I.R.O.,
Canberra.

- J. BROCKWELL.

BLOSSOM END ROT OF TOMATOES:

This condition was very prevalent in spring planted crops last year, when abnormally dry conditions existed in most tomato growing areas. A very large number of enquiries were received by the Science Branch during October and November from both commercial growers and home gardeners.

Varieties with a somewhat flattened fruit appeared to be most susceptible to blossom end rot though loss was reported on most of the varieties being grown. Reports received by this department indicated a loss of up to 50% in some crops.

Department of Agriculture,
Brisbane.

- J. C. JOHNSON.

BLACK SPOT OF TOMATOES:

The black spot or early blight disease (Alternaria solani) is one of the most important limiting factors to tomato production in the Geraldton district of Western Australia. Not only does it affect the yield but also the quality of the fruit transported overland to Melbourne and to a lesser extent to local markets.

Geraldton, which is located on the coast approximately 300 miles to the North of Perth is ideally situated for the production of a winter crop of tomatoes. The mild climatic conditions experienced during that season however, also favour the rapid and serious development of the black spot disease.

One of the main control measures recommended for this disease is the use of fungicidal sprays on the plants both in the seed bed and in the field. In previous years routine applications of copper fungicides such as Bordeaux mixture and copper oxychloride sprays, have given variable control and in June this year a comprehensive spray experiment was initiated. This experiment has been designed to test several of the newer fungicides which were available in this State, against the standard copper sprays at present being used by growers.

While the experiment will not be completed until the end of October preliminary results obtained may be of interest to workers in other States.

Assessment of defoliation of plants on the 11th September, after 9 sprays (at approximately 10 day intervals) had been applied to the plots, yielded the following figures:-

Treatment.	Average defoliation % (4 plots, 12 plants per plot).	* Infection Index %
1. Control - unsprayed	63	50
2. Bordeaux mixture	26	45
3. Zinc Bordeaux mixture	23	43
4. Cuprox	36	49
5. Zinc copper chromate	28	45
6. SR.406	30	46
7. Ziram	30	48
8. Phygon - XL	16	41

* Based on Improved Grading System for Measuring Plant Diseases - by Horsfall and Barratt. (Abs. in Phytopath. 35: 8: 655, 1945).

Department of Agriculture,
Perth.

- R. F. DOEPEL.

COMMON BEAN MOSAIC:

The importance of this disease has recently been investigated in a field trial where yield differences between infected and healthy plants were compared using three different strains of the Brown Beauty variety as testing material. Mechanical inoculation of the plots in the seedling stage gave 100% infection and a consequent yield reduction of 14.8% and 15.1% respectively for the two susceptible strains used. The third strain which had been shown to be immune in glasshouse trials was included for the purpose of comparison, and its immunity was confirmed.

Infected plants were not easy to detect as the crop approached maturity, though striking differences had existed for several weeks after the inoculations were made. This was attributed partly to the slow recovery of the inoculated plants and partly to the effect of cold winds which were of frequent occurrence, and which caused leaf malformation very similar to that caused by the virus.

Since field run Brown Beauty so far tested shows a mixture of susceptible, tolerant and immune types in fairly equal numbers, it is unlikely that large losses have occurred with it. The yield reduction is however, sufficient to warrant careful attention to resistance when breeding or selecting new lines of beans.

Department of Agriculture, - J. C. JOHNSON.
Brisbane.

FASCIATION IN CUCUMBERS:

During the spring of 1951 two plantings of cucumbers, one at Nambour and one at Gympie, were observed to be showing extensive fasciation. The main stem of every plant was fasciated, and in some instances was up to three inches wide.

Flowering was normal and good crops were harvested in both cases. The only abnormal climatic factor appeared to be a cold snap which was experienced in both districts just after the plants emerged.

Department of Agriculture, - B. L. OXENHAM.
Brisbane.

PARSNIP CANKER:

During the present winter parsnip canker has assumed serious proportions in Melbourne vegetable gardens. The disease is characterized by a chocolate brown rot in the crown region, but may also occur below the crown. The rot is dry initially, and seldom extends to a depth of more than a quarter of an inch. The rot may extend over most of the crown region and in advanced lesions becomes softer, presumably due to the presence of secondary invaders.

In at least one market-garden up to 90% of roots have been rendered unmarketable by this disease.

Isolations made from recently infected roots have yielded a fungus which appears to be responsible for the disease. This fungus produces a cream coloured mycelium on potato dextrose agar incubated at approximately 70°F. Colonies are slightly raised above the surface of the medium and have a tufted appearance due to the aggregation of a number of hyphae. Individual hyphae are very fine and spores so far observed resemble immature chlamydospores.

Healthy roots inoculated with this fungus, wrapped in polythene film and incubated at 70°F, commenced to rot in 24 hours. Chocolate brown lesions developed around the sites of inoculations, and the same fungus was re-isolated from the periphery of root lesions which had progressed for a period of 14 days.

It would appear that the fungus may be the Itersonilia Derx., recently claimed by R. E. Wilkinson to be responsible for parsnip canker in the U.S.A. (Abs. in Phytopath. 42 : 1: 23,1952).

The writer has been unable to find any reference in mycological literature, apart from the above, to a fungus of this name.

A letter has been forwarded to Wilkinson with a request for a description of Itersonilia Derx., which he presumes to be a lower Basidiomycete and, subject to his concurrence, a culture of the above isolate will be forwarded at a later date.

Department of Agriculture,
Melbourne.

- L. L. STUBBS.

PARSNIP LEAF SPOT CAUSED BY PHLEOSPORA CRESCENTIUM:

In July, 1952, some parsnip (Pastinaca sativa) leaves suffering from a leaf spot condition were collected at Hawkesbury Agricultural College, Richmond. The spots were light brown in colour and coalesced to produce quite large brown areas. These were covered with clusters of black dots, which also extended on to greener tissue, and were so numerous as to give affected leaves quite a dark colour.

Examination showed that the black dots were fungal fruiting bodies, resembling pycnidia and containing many hyaline curved spores, practically all of which had one transverse septum. In lacto-phenol cotton blue, these measured 27 - 59 x 4 - 6 μ (mean of 20 measurements: 42 x 5 μ).

The organism was identified as Phleospora crescentium (Barth.) Riley (syn. Cylindrosporium crescentium Barth.); the new combination P. crescentium having been established by Riley early this year (Mycologia 44: 2: 213-215, 1952). This identification was confirmed by Dr. Ellis of the Commonwealth Mycological Institute and represents the first record of the disease in New South Wales.

Department of Agriculture,
Sydney.

- J. WALKER.

ORNAMENTALS.

SCLEROTINIA ROOT ROT OF GLADIOLUS:

Sclerotinia gladioli is one of the major causes of corm blemish of gladiolus in N.S.W. In wet seasons it is also an important cause of neck rot, particularly in parts of the southern highlands. An aspect of its activities not previously emphasised is its ability to attack and kill both primary and secondary roots. This disease manifestation was observed rather frequently during the past season, particularly in late autumn crops, and appeared to be the result of attack on the growing plant from infested soil rather than from corm-borne inoculum.

Affected plants showed yellowing and death of the older two to four leaves, ranging from tip blight to destruction of most of the leaf, depending on the extent of root infection. Lightly affected plants bloomed reasonably well, but where more than two leaves showed die-back, growth was poor and no flowers formed.

In most cases no neck rot was associated, and the symptoms were sufficiently like those of the root rot caused by *Fusarium oxysporum* f. *gladioli* to necessitate the making of cultures to determine with certainty the cause of the disease.

Department of Agriculture,
Sydney.

- LILIAN R. FRASER.

MISCELLANEOUS NOTES.

SCLEROTIUM ROLFSII RECORDS:

Two interesting host records for *Sclerotium rolfsii* during 1951 were Hoop Pine (*Araucaria cunninghamii*) and rockmelons.

In the former case the fungus was found to be causing a collar rot of hoop pine seedlings at Como Forest Nursery near Gympie. Severe losses were experienced following heavy rains early in the year, but subsequent dry weather appeared to check the spread.

A common fruit rot in rockmelons in the Gayndah district was also found to be due to *S. rolfsii* infection, the organism entering where the fruit was in contact with the soil. If recent infections are not detected during harvesting, losses are also experienced in transit.

Department of Agriculture, Brisbane. - B. L. OXENHAM.

MOULDY FLAVOUR OF RIPE BANANAS:

Specimens of ripe banana fruit which had a disagreeable mouldy flavour were submitted to the Department recently by a householder for an explanation of the cause. The fruit was prime ripe and the skin carried a white deposit indicating that it had been dipped in Shirlan A.G. The skin showed no pronounced mould development, apart from slight black-end and the normal amount of anthracnose characteristic of ripe Cavendish bananas. The pulp was in good order. It is considered that absorption of the mouldy flavour might have been connected with longer than usual storage of ripe fruit in a case. Treatment of bananas in Shirlan A.G., besides preventing squirter, prolongs their market life and the ruling high price for the fruit (6d. each) is probably causing a slow turn over by retailers.

Department of Agriculture, Sydney. - C. J. MAGEE.

ERRATUM:

In the second line of the third paragraph of the article "*Fusicoccum viticolum* on Vines", A.P.D.R. 4: 3: 35, 1952, the reference Fmg. S. Afr. 8: 79, 1938 should read Fmg. S.Afr. 13: 79, 1938. - EDITOR.

COMMONWEALTH MYCOLOGICAL INSTITUTE NOTES.

EXTRACTS FROM REPORT FOR YEAR ENDING 31.3.1952:

During the year a Pool of Plant Pathologists was established at the Institute for work in Colonial Territories as required. So far one appointment has been made. Mr. R.A. Altson was appointed as mycologist and will take up duties in the near future. A similar Pool of Entomologists has been established at the Commonwealth Institute of Entomology. These pools have been formed under schemes financed entirely by Colonial Development and Welfare Funds. The object of the schemes is that the Colonial Office should have available Plant Pathologists or Entomologists to send out to a Colony lacking the necessary qualified staff to undertake investigations into problems of major economic importance.

The total receipts from sales of publications and cultures amounted to £5,230 against £4,496 for the previous year. The receipts from the Review of Applied Mycology were £3,137 against £2,884 and the number of subscribers increased from 1,088 to 1,184.

The following books were issued during the year:- A monograph of Leaf Curl Disease of Cotton by S.A.J. Tarr and a book entitled Ustilaginales of India by B.B. Mundkur and M.J. Thirumalachar. The first edition of 1,500 copies of Bisby's Introduction to the Taxonomy and Nomenclature of Fungi was exhausted.

The Identification service was fully utilized during the year. Among the most important determinations were *Puccinia polysora*, a rust from the American continent causing great damage to maize in West Africa, and a new species of *Cryptosporella* responsible for die-back of cloves in Zanzibar.

The additional accommodation provided by 59, 61 and 63 Kew Green has proved invaluable but already the need for further facilities began to be acutely felt during the year.

Department of Agriculture,
Sydney.

- C. J. MAGEE.